I hereby certify that this correspondence is being filed by depositing it with the United States Postal Service as first class mail in an envelope with sufficient postage and addressed to MS: Fee Amendment, Commissioner of Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date indicated below.

Date: February 26, 2007

Signed: Peter K. Trzyna (Reg. No. 32,601)

PATENT

Paper No.

File: Contcir-P1-04

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventors	:	McDermott, Brian J.; McGowen, Daniel; Spotts, Ralph Leo Jr.; Tryzbiak, Sid
Serial No.	:	10/790,363
Filed	:	March 1, 2004
For	:	ELECTRICAL DEVICE WITH TEETH JOINING LAYERS AND METHOD FOR MAKING THE SAME
Group Art Unit	:	2841
Examiner	:	Dinh, Tuan T

MS: Fee Amendment
Honorable Commissioner of Patents
P.O. Box 1450
Alexandria, VA 22313-1450

PETITION TO VACATE RESTRICTION REQUIREMENT

S I R :

In the above-referenced patent application, Applicant responded to a restriction requirement January 13, 2006, as follows:

> ...Applicant confirms that an election was made with traverse for Group 1. More particularly, the restriction requirement is believed to be improper, and reconsideration is requested.
>
> First, pursuant to 35 U.S.C. Sec. 132, if the restriction is maintained, Applicant respectfully requests PTO compliance with 35 U.S.C. Sec. 132, i.e., "the reasons for such requirement ... *together with such information as may be useful in judging the propriety of continuing prosecution*...". The Examiner contends in the restriction requirement that "Invention I can be made by a subtraction methods such as etching away a blank to form a conductive layer instead of the step of building up the conductive layer." Applicant neither admits nor denies the contention, but requires that degree of proof of the fact that is the Examiner's burden to provide, e.g., pursuant to Sec. 132. Failing *any* proof of the factual basis for the Examiner's contention in the restriction requirement, the

restriction requirement is improper.

Second, the restriction requirement is improper because Examiner has not shown that claims are independent and distinct and have separate utility. See, e.g., MPEP Sec. 802.

Third, even if they can be shown to be separate and distinct, there is "a serious burden on the Examiner if restriction is required (see MPEP Section 803.02, Section 806.04(a) - Section 806.04(i), Section 808.01(a), and Section 808.02)." And pursuant to GUIDELINES found there, "examiners must provide reasons and/or examples to support conclusions." The Examiner has not provided sufficient *any* "reasons and/or examples to support conclusions" as required by the MPEP.

The Sec. 132 information and reasons, the MPEP "reasons and/or examples to support conclusions," and reconsideration are therefore respectfully requested. In the absence thereof, the restriction requirement is improper.

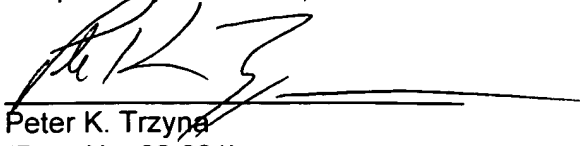
The subsequent Office Action failed to respond.

Applicant is entitled to an explanation as to how "Invention I can be made by a subtraction methods such as etching away a blank to form a conductive layer instead of the step of building up the conductive layer." Applicant is further entitled to a response to that which is set out above. Absent a factual basis for the restriction requirement, the restriction must be withdrawn or be vacated.

Further, see the Declaration of Professor C.P Wong. Claims drawn to apparatus are believed to be patentable over the cited art, and a rejoinder of the process claims to the apparatus claims is appropriate for this reason too.

The Commissioner is hereby authorized to charge any fees associated with the above-identified patent application or credit any overcharges to Deposit Account No. 50-0235. Additionally, the Examiner is invited to contact the undersigned at (312) 240-0824 if it can in any way expedite or ease the handling of this case. Please direct all correspondence to the undersigned at the address given below.

Respectfully submitted,



Date: February 26, 2007

Peter K. Trzyna
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PATENT

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Declaration of Professor C. P. Wong, Ph.D.

S I R :

I have personal knowledge of the subject matter of this decision, and if called as a witness, would testify thereto.

1. My name is C. P. Wong. I have a Ph.D. in Chemistry. I am currently a Regent's Professor and holder of the Charles Smithgall Institute Endowed Chair(one of the two Institute Chairs in Georgia Tech) in the School of Material Science and Engineering, Georgia Institute of Technology. I am a Research Director at the NSF Microsystems Packaging Research Center, which is the largest microelectronic packaging research center in the United States funded by the National Science Foundation. I have had over 19 years of experience in the microelectronics packaging industry at AT&T Bell Laboratories, where I was elected an AT&T Bell Laboratories Fellow (the most prestigious award bestowed by Bell Labs) in 1992 for my fundamental contributions to low-cost high performance plastic packaging of semiconductors. I am an elected IEEE Fellow in 1993, and an elected Member of the National Academy of

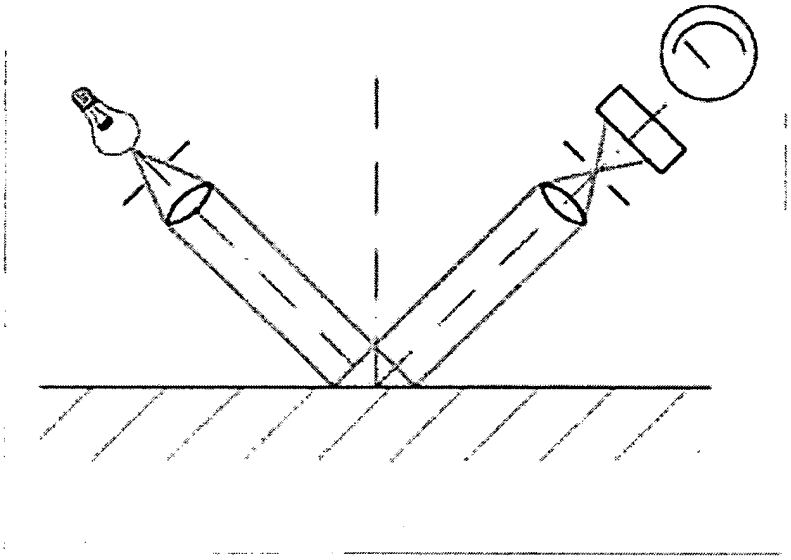
Engineering of the USA in 2000. I hold over 46 U.S. patents, numerous international patents, and have published over 550 technical papers and 400 key-notes, invited and technical presentations in the related area. I am the editor-in-chief of the *John Wiley Encyclopedia of Smart Materials*, an editor and author of the Academic Press text book on *Polymers for Electronic and Photonic Applications*, co-author of the McGraw Hill's *Electronic Packaging: Design, Materials, Processes and Reliability*, and *Electronic Manufacturing: With Lead-Free, Halogen-Free and Conductive Adhesive Materials*. I also serve on the Editorial Boards of the *IEEE Transactions on CPT* and the *Chip Scale Review*. I served as the technical Vice President (1990 &1991) and the President of the IEEE-CPMT Society (1992 &1993) and hailed as "Father of Modern Semiconductor Packaging" from the IEEE, and received the IEEE Technical Field Award for Components Packaging and Manufacturing Technology in 2006, which is one of the highest honors conferred by the IEEE.

2. I have been retained to give my opinion as to the examination of patent application Serial No. 10/790,363 (McDermott), particularly as to whether the claims are anticipated under 35 U.S.C. 102(b) or would have been obvious under 35 U.S.C. 103(a) to a person having ordinary skill in the art at the time of the invention, given U.S. Patent No. 5,517,758 (Nakamura) and other references cited in the office action mailed August 24, 2006.

3. I have reviewed McDermott, the office action, the claims as amended, Nakamura, and the other references cited in that office action, and it is my opinion that there are many recurring themes in the office action that reflect substantial misunderstandings or mischaracterizations.

4. Surface gloss measurement. One such theme concerns surface gloss measurement. For example, regarding claim 98, the office action states that "Nakamura discloses the removal of the portion (1) as shown in figure (1) is sufficient to produce a surface gloss measurement at an angle of 60 degrees of less than 10%, it can be seen from figure (1) that the opening (3) having an angle, which is approximately 60 degrees." It is my opinion that the statement "that the opening (3) having an angle, which is approximately 60 degrees," indicates a misunderstanding of surface gloss measurement because this statement has no bearing on the measurement.

Below shows a measurement technique of 'surface gloss' where a spectrometer shines a light source at an angle (60 ° is typical) and measures the % light reflected back to the receiver (less than 10% in the patent application). The 60 ° angle refers to the angle of the light source to the surface used in the surface gloss measurement equipment. Equipment such as the MicroGloss 60 Degrees sold by Imbotec is typical of equipment that can be used. By using reflectometers, reflected light of a surface is measured in an angle range which is limited by aperture dimensions.



A light beam in a reflectometer; the light source is projected over the sample surface onto the opening of an aperture; and a photoelectronic detector measures the light passing through the aperture.

More particularly, in conducting surface gloss measurement, specular reflection is measured with a specular glossmeter. Unpolarized white light is concentrated by a focused lens onto a field aperture, which is located in the focal plane of the source lens. The reflected beam at the surface is later collected by the receptor lens. The intensity of the beam is then measured through a photodetector. The common angles of incidence for gloss measurement are 20°, 60° and 85°. Low gloss surfaces are recommended to be measured with 85° settings. The typical standards for gloss measurements are ASTM (American Standard Test Method) D 2457, DIN EN ISO 2813 and DIN 67530.

Nakamura makes no disclosure of surface gloss measurement. Further, without doing laboratory testing, it would not be possible to determine the surface gloss measurement of a piece constructed according to a Nakamura process. One cannot determine a surface gloss measurement from anything stated in Nakamura or as proposed in the office action. Therefore, the rejection is premised on a mischaracterization of Nakamura. See claims 92, 98, 104, 110-114, and 129-133. See also, claims 2-3, 8, 14, 20-24, and 39-43.

5. Combining sandblasting with heat and press. With regard to claim 91, in the office action at page 11, the Examiner states that "Nakamura does not disclose an angle of the cavity being obtuse." The Examiner also states that "Katagiri shows cavities each being obtuse" and that "It would have been obvious... to have ... cavities each having an obtuse angle as taught by Katagiri modified the dielectric material of Nakamura..." Nakamura's cavities in Table 1 are produced by sandblasting (Col. 5, line 52) and Katagiri's cavities are made by a heat and press process (Col. 4, lines 38). Sandblasting and heat and press are alternatives that are not known to be combinable in the manner set out in the office action - nowhere is it shown that one can modify the structure produced by sandblasting so as to

produce the structure produced from a heat and press process. In my opinion, one having ordinary skill in the art at the time of the invention would not have combined the Nakamura/ Katagiri teachings in the manner set out in the office action at least because combining the words of these two references does not involve an ability to combine their specific structures.

Further, the Nakamura statement "the shape of the insulating resin layer 2 reflects the shape of the abrasives 1" (Col. 5, lines 14-15.) contradicts the office action statement purporting to make a shape that does not reflect the shape of the abrasives. Indeed, contrary to the office action, such an ordinary skilled person would have known that a sandblasting process would obliterate a heat-and press product, and heat and press process would obliterate a sandblasting product. Therefore, the attempt to combine the teachings in the manner proposed in the office action would render substantial portions of the references pointless and inoperative under the principles set out in the patents.

In summary, it is my opinion that a person having ordinary skill in the art at the time of the invention would have viewed Nakamura and Katagiri as incompatible processes and not combinable or cooperatively modifiable in the manner set out in the office action. There is no suggestion to combine or modify Nakamura and Katagiri that could overcome what would have been seen as their fundamental incompatibility. Such a person would have viewed the office action-proposed modification of a sandblasting process to result in a structure produced by a heat and press process as implausible and not known to be technically feasible. Such a person would have believed that the proposed modification involves explicit contradiction with Nakamura, and also would (if technically feasible) profoundly render substantial portions of each patent as pointless and inoperative. For example, Katagiri's heat and press would result in Nakamura's sand blasting being rendered unsatisfactory for its intended purpose of roughening the surface. Therefore, the rejection is premised on a mischaracterization of Nakamura and Katagiri and how they would have been viewed at the time of priority for the McDermott patent application. See claims 91-96, 108-109, 111-112, 120-121, and 145. See also claims 1-6, 18-19, 21, 31, and 55.

6. Physical roughening. As to claims 94-96, the office action states, with regard to Nakamura, that "the removal does not include physical roughening." See pages 11-12. Nakamura states "the insulating resin layer 2 roughened by the dry sand blasting...." Col. 6, lines 64-65; Col. 10, lines 18-21. And as noted above, Nakamura uses sandblasting with abrasives, which of course is physical roughening. Thus, the office action mischaracterizes, and is explicitly contradicted by, Nakamura. See claims 94-95, 99-100, 105-106, 112-113, and 117. See also claims 4-6, 9-11, 15-16, 22-24, 27.

7. Means for. As to claim 119, the office action states that "Nakamura discloses... means for joining...." The applicant's filing of June 8, 2006, states that "means for" language is to be construed against the particular means for shown in the specification, according to the MPEP Sec. 2181. The subsequent office action did not respond to the pointing out of the MPEP section, but one can readily see that the "means for" of McDermott is different than the "means for" of Nakamura by comparing the color photographs of McDermott with any of the figures, particularly figure 1C, of Nakamura. The McDermott "means for" also is not shown by any of the other references cited in the office action, and so far as I can see from the application file, the end product structure was unknown prior to McDermott. Therefore, the rejection is premised on a mischaracterization of Nakamura. See claims 119-121, 125-126, 134-137, and 180. See also claims 29-31, 35-36, and 44-47.

8. Build up and subtraction. In the office action of 07/13/2005, the Examiner contends that "Invention I can be made by a subtraction methods such as etching away a blank to form a conductive layer instead of the step of building up the conductive layer." The fact that one has made a contention does not make the contention true, and it is my opinion that one would need to see some factual basis for the contention in order to know whether the examiner is correct. The office action contention does not provide a sufficient factual basis to allow one to determine what the examiner had in mind.

9. Destroy the integrity. The present office action, with regard claims 131-135, the office action states that "Nakamura discloses the conductive layer (4) is built up in the cavities (3) sufficiently that separation destroy integrity of the portion of the conductive layer and or the dielectric material." Nakamura makes no disclosure of destructive testing or a destruction of either or both of the conductive layer and or the dielectric material from separation. Without doing laboratory testing of a piece constructed according to a Nakamura process, I believe it would not be possible to determine whether the separation would destroy the integrity of the conductive layer, the dielectric material, or both. Nakamura does not comment on this feature, so a person having ordinary skill in the art at the time of the invention would have no apparent reason to expect that separation would destroy the integrity of the conductive layer, the dielectric material, or both. The rejection is premised on a mischaracterization of what is disclosed in Nakamura. See claims 96, 101, 107, 114, 118, 124, 127-128, 131-133, and 136-137. See also claims 6, 11, 17, 24, 28, 34, 37, 41-43, and 46.

10. Teeth per linear inch. The office action, with regard to claim 102, seeks to compute a number of teeth per inch by using the Rmax value of Table 1 in Nakamura. Rmax is not a measure of number of teeth or spacing between teeth, but rather is a measurement of depth. The attached, for example, states:

> **Maximum roughness depth Rmax** is the largest single roughness depth within the evaluation length.
>
> http://www.mahr.com/index.php?NodeID=8718&SourceID=8718&print=1

By wrongly treating a measurement of depth as a measure of number of teeth or spacing between teeth, the office action computation makes no sense whatsoever. One cannot compute number of teeth per linear inch in the manner set out in the office action. Nakamura does not mention the claimed number of teeth per linear inch. The rejections based on this misunderstanding or mischaracterization of what Nakamura discloses make no sense. See claims 102-107, 115-116, 122-124 and 138-143. See also claims 12-17 and 48-53.

11. In summary, it is my opinion that the rejections mentioned herein reflect serious misunderstandings of the technology and mischaracterizations of the cited references. So far as I can see from the application file (e.g., compare the color McDermott photographs with all cited references), the end product structure was apparently unknown prior to McDermott. The office action contentions that certain claims would have been obvious to a person having ordinary skill in the art at the time of the invention, based on Nakamura and Katagiri, are completely implausible.

12. I hereby declare that all statements made herein of my own knowledge are true and

that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

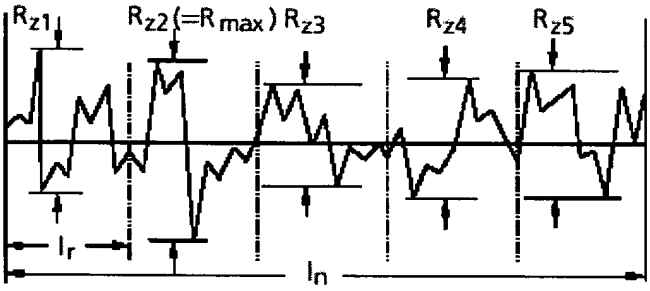
Date: 2/26/2007

C. P. Wong

Roughness depth DIN EN ISO 4287, ASME B46.1

R_z, R_{max}

Definition



Single roughness depth Rzi is the vertical distance between the highest peak and the deepest valley within a sampling length.

Mean roughness depth Rz is the arithmetic mean value of the single roughness depths Rzi of consecutive sampling lengths:

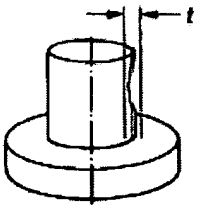
$$R_z = \frac{1}{n}(R_{z1} + R_{z2} + \ldots + R_{zn})$$

Maximum roughness depth Rmax is the largest single roughness depth within the evaluation length.
The Rz definition is identical to the definition in D IN 4768:1990. The ten point height Rz as well as the parameter symbol Ry of ISO 4287:1984 have been canceled. Cf. DIN EN ISO 88; Rmax is also called Rz1max.

Perpendicularity ISO 1101 (1985-03)

General notes on form and location tolerances

Definition



The tolerance zone is limited in the measuring plane by two parallel, straight lines a distance t apart and perpendicular to the datum.